CLAIMS:

1. A nanostructure of an inorganic semiconductor material, characterized in that the nanostructure comprises a nanotube with a crystalline mantle and a hollow core.

2. A nanostructure as claimed in Claim 1, characterized in that the hollow core has a diameter in the range of 2 and 20 nm.

3. A nanostructure as claimed in Claim 1 or 2, characterized in that the mantle has a thickness in the range of 1-20 nm.

4. A nanostructure as claimed in Claim 1, characterized in that the hollow core is partially filled with the compound semiconductor material of the mantle of the nanotube.

5. A nanostructure as claimed in Claim 1, characterized in that the nanostructure comprises a first zone having a p-type doping and a second zone having an n-type doping, the first and second zones having a mutual interface constituting a pn-junction.

6. A nanostructure as claimed in Claim 1, characterized in that the inorganic semiconductor material is chosen from the group of III-V semiconductor materials.

7. A dispersion of nanostructures according to any one of the Claims 1-6 in a solvent.

8. An electronic device comprising a first and a second electrode which are mutually connected through at least one nanostructure according to any one of the Claims 1-6.

9. An electronic device as claimed in Claim 8, characterized in that an insulating substrate with pores that are mutually substantially parallel is present, the pores extending from the first to the second electrode, in which pores the nanostructures are provided.

10. A method of preparing nanostructures of a compound semiconductor material, comprising the steps of:

providing growth nuclei of an electroconductive material on a electroconductive surface of a substrate; and

growing the nanostructures by chemical vapor deposition at a growth temperature,

characterized in that the growth temperature is above a first transition temperature during a first growth period, therewith obtaining nanotubes having a crystalline mantle and a hollow core.

11. A method as claimed in Claim 10, characterized in that the thickness of the mantle is varied by variation of the temperature above the first transition temperature.

12. A method of manufacturing an electronic device, comprising the steps of

providing growth nuclei of an electroconductive material on a electroconductive surface of a substrate, the surface being patterned so as to define a first electrode;

growing nanostructures of a compound semiconductor material by chemical vapor deposition at a growth temperature; and

providing a second electrode that is in electrical contact with the nanostructures grown,

characterized in that the growth temperature is above a first transition temperature during a first growth period, therewith obtaining nanotubes, having a crystalline mantle and a hollow core.

13. A manufacturing method as claimed in Claim 12, characterized in that during the growth first a first dopant is added to the vapor in the chemical vapor deposition reactor and thereafter a second dopant is added, the first dopant being of a first doping type and the second dopant being of a second doping type.